

PATENT
Attorney Docket No. 216190

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

LI et al.

Art Unit: Unassigned

Corresponding to International
Application No. PCT/GB00/03964

Examiner: Unassigned

Filed: Concurrently

For: **METHODS AND APPARATUS FOR
DRIVING A QUADRUPOLE ION
TRAP DEVICE**

PENDING CLAIMS AFTER ENTRY OF PRELIMINARY AMENDMENT

1. A method for driving a quadrupole ion trap device including,

creating a digital signal,

using the digital signal to control a set of switches to cause the switches alternately to switch between a high voltage level and a low voltage level to generate a time-varying rectangular wave voltage,

supplying the time-varying rectangular wave voltage to the quadrupole ion trap device to trap ions in a predetermined range of mass-to-charge ratio,

varying the digital signal to vary the predetermined range of mass-to-charge ratio of ions that can be trapped by the quadrupole ion trap device and

further supplying to the quadrupole ion trap device a time-varying dipole excitation voltage to cause mass-selective resonant oscillatory motion of ions in the device.